

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

**1.     *(canceled).***

2. (currently amended): An apparatus for driving a plurality of display units ~~in a mobile electronic apparatus~~, each including a plurality of data lines, a plurality of scan lines and a plurality of pixels each provided at one of said data lines and one of said scan lines, the apparatus comprising:

at least one of a common data driver circuit and a common scan driver circuit,

said common data driver circuit including a plurality of first switch groups, each first switch group being connected to the data lines of one of said display units for driving the data lines of said one of said display units,

said common scan driver circuit including a plurality of second switch groups, each second switch group being connected to the scan lines of one of said display units for driving the scan lines of said one of said display units,

wherein said common data driver circuit comprises:

a plurality of frame memories for storing video signals, each for one of said display units;

a plurality of third switch groups each group being connected to one of said frame memories and being operated in synchronization with operations of said first switch groups;

a line memory, connected to said third switch groups, for selectively storing one line data of said frame memories in accordance with the operations of said third switch groups;

a gradation voltage generating circuit;

a decoder circuit, connected to said line memory and said gradation voltage generating circuit, for selecting gradation voltages from said gradation voltage generating circuit in accordance with output signals of said line memory; and

an output circuit, connected between said decoder circuit and said first switch groups, for transmitting said selected gradation voltages to said first switch groups, so that said selected gradation voltages are transmitted to the data lines of one of said display units in accordance with the operations of said first switch groups.

3. (original): The apparatus as set forth in claim 2, wherein said gradation voltage generating circuit comprises a plurality of gradation voltage generating units each for one of said display units.

4. (previously presented): The apparatus as set forth in claim 2, wherein said output circuit comprises:

a plurality of voltage followers, connected to said decoder circuit, for amplifying said selected gradation voltages;

a plurality of first switches each connected to one of said voltage followers; and

a plurality of second switches each connected between an input of one of said voltage followers and an output of one of said first switches,

wherein said first switches are turned ON for a first predetermined time period, and then, said second switches are turned ON while said first switches are turned OFF.

5. (original): The apparatus as set forth in claim 4, wherein said output circuit further comprises a plurality of third switches each connected between the output of one of said first switches and a ground, said third switches being turned ON by a control signal when driving of one of said display units is switched to driving of the other of said display units.

6. *(canceled)*.

7. (currently amended): An apparatus for driving a plurality of display units ~~in a mobile electronic apparatus~~, each including a plurality of data lines, a plurality of scan lines and a plurality of pixels each provided at one of said data lines and one of said scan lines, the apparatus comprising:

at least one of a common data driver circuit and a common scan driver circuit,

said common data driver circuit including a plurality of first switch groups, each first switch group being connected to the data lines of one of said display units for driving the data lines of said one of said display units,

said common scan driver circuit including a plurality of second switch groups, each second switch group being connected to the scan lines of one of said display units for driving the scan lines of said one of said display units,

wherein said common data driver circuit comprises:

a shift register circuit for shifting a horizontal start signal in accordance with a horizontal clock signal;

a line memory, connected to said shift register circuit, for storing one line data in accordance with said shift register circuit;

a gradation voltage generating circuit;

a decoder circuit, connected to said line memory and said gradation voltage generating circuit, for selecting gradation voltages from said gradation voltage generating circuit in accordance with output signals of said line memory; and

an output circuit, connected between said decoder circuit and said first switch groups, for transmitting said selected gradation voltages to said first switch groups, so that said selected gradation voltages are transmitted to the data lines of one of said display units in accordance with the operations of said first switch groups,

wherein said gradation voltage generating circuit comprises a plurality of gradation voltage generating units each for one of said display units.

8. (currently amended): An apparatus for driving a plurality of display units ~~in a mobile electronic apparatus~~, each including a plurality of data lines, a plurality of scan lines and a plurality of pixels each provided at one of said data lines and one of said scan lines, the apparatus comprising:

at least one of a common data driver circuit and a common scan driver circuit,

said common data driver circuit including a plurality of first switch groups, each first switch group being connected to the data lines of one of said display units for driving the data lines of said one of said display units,

said common scan driver circuit including a plurality of second switch groups, each second switch group being connected to the scan lines of one of said display units for driving the scan lines of said one of said display units,

wherein said common data driver circuit comprises:

a shift register circuit for shifting a horizontal start signal in accordance with a horizontal clock signal;

a line memory, connected to said shift register circuit, for storing one line data in accordance with said shift register circuit;

a gradation voltage generating circuit;

a decoder circuit, connected to said line memory and said gradation voltage generating circuit, for selecting gradation voltages from said gradation voltage generating circuit in accordance with output signals of said line memory; and

an output circuit, connected between said decoder circuit and said first switch groups, for transmitting said selected gradation voltages to said first switch groups, so that said selected gradation voltages are transmitted to the data lines of one of said display units in accordance with the operations of said first switch groups,

wherein said output circuit comprises:

a plurality of voltage followers, connected to said decoder circuit, for amplifying said selected gradation voltages;

a plurality of first switches each connected to one of said voltage followers; and

a plurality of second switches each connected between an input of one of said voltage followers and an output of one of said first switches,

wherein said first switches are turned ON for a first predetermined time period, and then, said second switches are turned ON while said first switches are turned OFF.

9. (original): The apparatus as set forth in claim 8, wherein said output circuit further comprises a plurality of third switches each connected between the output of one of said first switches and a ground, said third switches being turned ON by a control signal when driving of one of said display units is switched to driving of the other of said display units.

10. *(canceled)*.

11. *(canceled)*.

12. (currently amended): An apparatus for driving a plurality of display units ~~in a mobile electronic apparatus~~, each including a plurality of data lines, a plurality of scan lines and a plurality of pixels each provided at one of said data lines and one of said scan lines, the apparatus comprising:

at least one of a common data driver circuit and a common scan driver circuit,

said common data driver circuit including a plurality of first switch groups, each first switch group being connected to the data lines of one of said display units for driving the data lines of said one of said display units,

said common scan driver circuit including a plurality of second switch groups, each second switch group being connected to the scan lines of one of said display units for driving the scan lines of said one of said display units;

an oscillator;

a plurality of first frequency dividers, connected to said oscillator, for frequency-dividing an output signal of said oscillator to generate horizontal clock signals;

a fifth switch group connected to said first frequency dividers;

a plurality of second frequency dividers, connected to said oscillator, for frequency-dividing the output signal of said oscillator to generate vertical clock signals;

a sixth switch group connected to said second frequency dividers; and

a frequency control circuit, connected to said fifth and sixth switch groups, for selecting and turning ON one switch of said fifth switch group and one switch of said sixth switch group, so that the data lines of said one of said display units are driven by a selected one of said horizontal clock signals and the scan lines of said one of said display units are driven by a selected one of said vertical clock signals, thus always realizing a definite frame frequency of said one of said display units.

***13. (canceled).***

14. (currently amended): An apparatus for driving a plurality of display units ~~in a mobile electronic apparatus~~, each including a plurality of data lines, a plurality of scan line and a

plurality of pixels each provided at one of said data lines and said scan lines, the apparatus comprising:

- a single common data driver circuit including a plurality of first switch groups, each first switch group being connected to the data lines of one of said display units for driving the data lines of said one of said display units; and

- a plurality of scan driver circuits, each connected to the scan lines of one of said display units, for driving the scan lines of said one of said display units,

- wherein said single common data driver circuit comprises:

- a plurality of frame memories for storing video signals, each for one of said display units;

- a plurality of third switch groups each group being connected to one of said frame memories and being operated in synchronization with operations of said first switch groups;

- a line memory, connected to said third switch groups, for selectively storing one line data of said frame memories in accordance with the operations of said third switch groups;

- a gradation voltage generating circuit;

- a decoder circuit, connected to said line memory and said gradation voltage generating circuit, for selecting gradation voltages from said gradation voltage generating circuit in accordance with output signals of said line memory; and

- an output circuit, connected between said decoder circuit and said first switch groups, for transmitting said selected gradation voltages to said first switch groups, so that said selected



gradation voltages are transmitted to the data lines of one of said display units in accordance with the operations of said first switch groups.

15. (original): The apparatus as set forth in claim 14, wherein said gradation voltage generating circuit comprises a plurality of gradation voltage generating units each for one of said display units.

16. (original): The apparatus as set forth in claim 14, wherein said output circuit comprises:

a plurality of voltage followers, connected to said decoder circuit, for amplifying said selected gradation voltages;

a plurality of first switches each connected to one of said voltage followers; and

a plurality of second switches each connected between an input of one of said voltage followers and an output of one of said first switches,

wherein said first switches are turned ON for a first predetermined time period, and then, said second switches are turned ON while said first switches are turned OFF.

17. (original): The apparatus as set forth in claim 16, wherein said output circuit further comprises a plurality of third switches each connected between the output of one of said first switches and a ground, said third switches being turned ON by a control signal when driving of one of said display units is switched to driving of the other of said display units.

**18. (canceled).**

19. (currently amended): An apparatus for driving a plurality of display units ~~in a mobile electronic apparatus~~, each including a plurality of data lines, a plurality of scan line and a plurality of pixels each provided at one of said data lines and said scan lines, the apparatus comprising:

a single common data driver circuit including a plurality of first switch groups, each first switch group being connected to the data lines of one of said display units for driving the data lines of said one of said display units; and

a plurality of scan driver circuits, each connected to the scan lines of one of said display units, for driving the scan lines of said one of said display units,

wherein said single common data driver circuit comprises:

a shift register circuit for shifting a horizontal start signal in accordance with a horizontal clock signal;

a line memory, connected to said shift register circuit, for storing one line data in accordance with said shift register circuit;

a gradation voltage generating circuit;

a decoder circuit, connected to said line memory and said gradation voltage generating circuit, for selecting gradation voltages from said gradation voltage generating circuit in accordance with output signals of said line memory; and

an output circuit, connected between said decoder circuit and said first switch groups, for transmitting said selected gradation voltages to said first switch groups, so that said selected

gradation voltages are transmitted to the data lines of one of said display units in accordance with operations of said first switch groups,

wherein said gradation voltage generating circuit comprises a plurality of gradation voltage generating units each for one of said display units.

20. (previously presented): The apparatus as set forth in claim 19, wherein said output circuit comprises:

a plurality of voltage followers, connected to said decoder circuit, for amplifying said selected gradation voltages;

a plurality of first switches each connected to one of said voltage followers; and

a plurality of second switches each connected between an input of one of said voltage followers and an output of one of said first switches,

wherein said first switches are turned ON for a first predetermined time period, and then, said second switches are turned ON while said first switches are turned OFF.

21. (original): The apparatus as set forth in claim 20, wherein said output circuit further comprises a plurality of third switches each connected between the output of one of said first switches and a ground, said third switches being turned ON by a control signal when driving of one of said display units is switched to driving of the other of said display units.

22. *(canceled)*.

23. (currently amended): An apparatus for driving a plurality of display units ~~in a mobile electronic apparatus~~, each including a plurality of data lines, a plurality of scan line and a

plurality of pixels each provided at one of said data lines and said scan lines, the apparatus comprising:

- a single common data driver circuit including a plurality of first switch groups, each first switch group being connected to the data lines of one of said display units for driving the data lines of said one of said display units; and

- a plurality of scan driver circuits, each connected to the scan lines of one of said display units, for driving the scan lines of said one of said display units;

- an oscillator;

- a plurality of first frequency dividers, connected to said oscillator, for frequency-dividing an output signal of said oscillator to generate horizontal clock signals;

- a fourth switch group connected to said first frequency dividers;

- a plurality of second frequency dividers, connected to said oscillator, for frequency-dividing the output signal of said oscillator to generate vertical clock signals;

- a fifth switch group connected to said second frequency dividers; and

- a frequency control circuit, connected to said fourth and fifth switch groups, for selecting and turning ON one switch of said fourth switch group and one switch of said fifth switch group, so that the data lines of said one of said display units are driven by a selected one of said horizontal clock signals and the scan lines of said one of said display units are driven by a selected one of said vertical clock signals, thus always realizing a definite frame frequency of said one of said display units.

*Claims 24-33. (canceled).*

34. (new): The apparatus as set forth in claim 2, wherein the at least one of the common data driver circuit and the common scan driver circuit is formed with at least one of said plurality of display units on a single substrate.

35. (new): The apparatus as set forth in claim 2, wherein the apparatus and at least one of the plurality of display units are integrated on a substrate.

36. (new): The apparatus as set forth in claim 7, wherein the at least one of the common data driver circuit and the common scan driver circuit is formed with at least one of said plurality of display units on a single substrate.

37. (new): The apparatus as set forth in claim 7, wherein the apparatus and at least one of the plurality of display units are integrated on a substrate.

38. (new): The apparatus as set forth in claim 8, wherein the at least one of the common data driver circuit and the common scan driver circuit is formed with at least one of said plurality of display units on a single substrate.

39. (new): The apparatus as set forth in claim 8, wherein the apparatus and at least one of the plurality of display units are integrated on a substrate.

40. (new): The apparatus as set forth in claim 12, wherein the at least one of the common data driver circuit and the common scan driver circuit is formed with at least one of said plurality of display units on a single substrate.

41. (new): The apparatus as set forth in claim 12, wherein the apparatus and at least one of the plurality of display units are integrated on a substrate.

42. (new): The apparatus as set forth in claim 14, wherein the at least one of the common data driver circuit and the common scan driver circuit is formed with at least one of said plurality of display units on a single substrate.

43. (new): The apparatus as set forth in claim 14, wherein the apparatus and at least one of the plurality of display units are integrated on a substrate.

44. (new): The apparatus as set forth in claim 19, wherein the at least one of the common data driver circuit and the common scan driver circuit is formed with at least one of said plurality of display units on a single substrate.

45. (new): The apparatus as set forth in claim 19, wherein the apparatus and at least one of the plurality of display units are integrated on a substrate.

46. (new): The apparatus as set forth in claim 23, wherein the at least one of the common data driver circuit and the common scan driver circuit is formed with at least one of said plurality of display units on a single substrate.

47. (new): The apparatus as set forth in claim 23, wherein the apparatus and at least one of the plurality of display units are integrated on a substrate.

48. (new): A panel unit comprising:  
a plurality of display units, each including a plurality of data lines, a plurality of scan lines and a plurality of pixels, each of the plurality of pixels provided at one of said data lines and one of said scan lines; and

a driver unit,

wherein the driver unit comprises:

at least one of a common data driver circuit and a common scan driver circuit,

said common data driver circuit including a plurality of first switch groups, each first switch group being connected to the data lines of one of said display units for driving the data lines of said one of said display units,

said common scan driver circuit including a plurality of second switch groups, each second switch group being connected to the scan lines of one of said display units for driving the scan lines of said one of said display units,

wherein said common data driver circuit comprises:

a plurality of frame memories for storing video signals, each for one of said display units;

a plurality of third switch groups each group being connected to one of said frame memories and being operated in synchronization with operations of said first switch groups;

a line memory, connected to said third switch groups, for selectively storing one line data of said frame memories in accordance with the operations of said third switch groups;

a gradation voltage generating circuit;

a decoder circuit, connected to said line memory and said gradation voltage generating circuit, for selecting gradation voltages from said gradation voltage generating circuit in accordance with output signals of said line memory; and

an output circuit, connected between said decoder circuit and said first switch groups, for transmitting said selected gradation voltages to said first switch groups, so that said selected gradation voltages are transmitted to the data lines of one of said display units in accordance with the operations of said first switch groups.

49. The panel unit as set forth in claim 48, wherein the driver unit and at least one of the plurality of display units are formed on a single substrate.